Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-13. (canceled)

Claim 14 (previously presented): An integrated sensor device for measuring a distance between the sensor device and an object, the sensor device comprising:

a first capacitor plate positioned adjacent the object to the form a first capacitance between the first plate and the object;

a second capacitor plate positioned adjacent the object to form a second capacitance between the second plate and the object, the second plate being coplanar with the first plate; and

an amplifier having an input and an output, the input being connected to the first plate and connectable to a voltage source, and the output being connected to the second plate to form a negative feedback branch that includes the first and second capacitor plates and the object.

Claim 15 (previously presented): The sensor device of claim 14, further comprising a layer of insulating material contacting outer surfaces of the first and second plate, such that the insulating material is positioned between the plates and the object.

Claim 16 (previously presented): The sensor device of claim 14, further comprising:

a logic unit connected to the input of the amplifier, the logic unit being structured to generate an electric charge variation; and

an output detector connected to the output of the amplifier, the output detector being structured to detect a voltage step at the amplifier output that is

based on the electric charge variation and the first and second capacitor plates and the object.

Claim 17 (previously presented): The sensor device of claim 16, wherein the logic unit includes a reference voltage source for generating a voltage step and a capacitive element interposed between the voltage source and the amplifier input, the capacitive element producing the electric charge variation in response to the voltage step.

Claim 18 (previously presented): The sensor device of claim 14, wherein the first and second capacitor plates and amplifier comprise a first cell of an array of substantially identical cells integrated on a single semiconductor chip.

Claim 19 (previously presented): The integrated sensor device of claim 14, further comprising;

a switching element connected between said input and said output of said amplifier to selectively couple the input to the output.

Claim 20 (previously presented): A sensor device for measuring a distance between the sensor device and an object, the sensor device comprising:

a voltage source providing an input voltage;

a first capacitor plate positioned adjacent the object to form a first capacitance between the first plate and the object;

a second capacitor plate positioned adjacent the object to form a second capacitance between the second plate and the object; and

an amplifier having an input and an output, the input being connected to the voltage source and the first plate and the output being connected to the second plate to form a negative feedback branch that includes the first and second capacitances.

Claim 21 (previously presented): The sensor device of claim 20, wherein the amplifier includes an inverting amplifier.

Claim 22 (previously presented): The sensor device of claim 20, wherein the first and second plate and the amplifier comprise a sensor cell in an array of sensor cells positioned adjacent the object such that each sensor cell measures a distance between the sensor cell and the object.

Claim 23 previously presented): The sensor device of claim 20, further comprising an input capacitor connected between the voltage source and the amplifier input, wherein the distance between the first plate and the object is inversely proportional to an input capacitance developed on the input capacitor.

Claim 24 (previously presented): The sensor device of claim 20, further comprising a dielectric layer positioned between each of the first and second plates and the object, wherein the first capacitance is inversely proportional to the distance between the plates and the object.

Claim 25 (previously presented): The sensor device of claim 20, further comprising a switch connected between the amplifier input and output such that when the switch is closed the amplifier input has a voltage equal to a voltage on the amplifier output and when the switch is opened the amplifier output has the output voltage that is proportional to the distance between the plates and the object.

Claim 26 (previously presented): The sensor device of claim 20, wherein the object is a finger having a ridge adjacent a valley, the first and second plates and the amplifier comprising a first sensor cell that measures a distance between the

ridge and the plates, the sensor device further comprising a second sensor cell positioned adjacent the valley to measure a distance between the valley and the second sensor cell and thereby determine a border between the ridge and the valley.

Claim 27 (previously presented): The sensor device of claim 20, wherein the sensor device is integrated on a single semiconductor substrate.

Claim 28 (previously presented): An integrated sensor device for measuring a distance between the sensor device and an object, the sensor device comprising:

an input voltage source for providing a step voltage;

a plurality of output lines; and

an array of distance detecting cells selectively connected to the input voltage source and to the output lines, each cell including a capacitive distance sensor which includes:

a first plate positioned in proximity to an object to form a first capacitance between the first plate and the object;

a second plate positioned in proximity to the object to form a second capacitance between the second plate and the object, the second plate being coplanar with the first plate; and

an amplifier having an input and an output, the input being connected to the input voltage source and to the first plate and the output being connected to the second plate to form a negative feedback branch that includes the first and second capacitances to establish an output voltage at the amplifier output in response to the step voltage of the input voltage source, the output voltage being proportional to a distance between the first plate and the object.

Claim 29 (previously presented): The distance sensor system of claim 28, further comprising:

logic means coupled to the input of each detecting cell amplifier to supply each input with an electric charge variation; and

output detecting means for detecting a voltage step at the output terminal of each detecting cell amplifier.

Claim 30 (previously presented): The distance sensor system of claim 28, further comprising:

an interface for linking the distance sensor system to a computer, the interface including an analog to digital (A/D) converter configured to be coupled between the plurality of output lines and the computer;

a bias generator and a timing generator configured for coupling with the A/D converter to convert analog voltage measurements output by the array to digital signals to be recognized by the computer as distance measurements; and a synchronization line configured to couple the array directly to the computer to provide the computer with synchronization signals to help the computer interpret, as distance measurements, the digital signals received by the computer from the A/D converter.

Claim 31 (previously presented): The distance sensor system of claim 28, wherein the input voltage source comprises a horizontal scanning circuit and a vertical scanning circuit; and an output buffer element coupled to the output lines.

Claim 32 (previously presented): The distance sensor of claim 28, further comprising:

means for generating a reference voltage step supplied in parallel to the distance detecting cells; and

further including horizontal and vertical scanning means for sequentially enabling the distance detecting cells.

Claim 33 (previously presented): The distance sensor of claim 28, wherein the amplifier includes first and second transistors of the N-channel type and third and fourth transistors of the P-channel type being coupled together in series as comprising a high gain cascade inverting amplifier.

Claim 34 (currently amended): The distance sensor of Claim ~~28~~, 33, wherein a first horizontal scan line and a first vertical scan line are coupled, respectively, from horizontal and vertical scanners to the second transistor and the third transistor, respectively, to limit power consumption of non-addressed cells.

Claim 35 (currently amended): The distance sensor of Claim ~~28~~, 33, wherein the output of the amplifier is coupled to a vertical output line through series connected fifth and sixth transistors and a seventh transistor couples the vertical output line to an output buffer of the distance sensor.

Claim 36 (previously presented): The distance sensor of claim 35, wherein the gate of a sixth transistor is coupled by a second horizontal scan line to the horizontal scanner and the gate of the seventh transistor is coupled by a second vertical scan line to the vertical scanner to ensure that only one cell at a time is communicating with the output buffer of the distance sensor.

Claim 37 (previously presented) The distance sensor of claim 28, further comprising a reset switch coupled between the input and the output of the amplifier.

Claim 38 (currently amended): The distance sensor of Claim 35, further comprising a reset switch coupled between the input and the output of the amplifier, and wherein the reset switch includes an eighth transistor and a ninth transistor ~~transistors~~ having their drain terminals coupled to the input of the amplifier and their source terminals coupled to the output of the amplifier.

Claim 39 (previously presented): The distance sensor system of claim 28, further comprising a logic means including a digital to analog converter, an I.sup.2C interface and control device, and a bias generator, oscillator, and timing generator, the digital to analog converter configured to couple the I.sup.2C interface and control device and the bias generator to the array, the I.sup.2C interface and control device configured to provide a bi-directional communication protocol for communication between the distance sensor system and a controller, the timing generator configured to generate timing signals based upon a single clock signal from the oscillator and to provide the timing signals to the array under control of the I.sup.2C interface and control device.

Claim 40 (previously presented): An integrated sensor device for measuring a distance between the sensor device and an object, the sensor device comprising:

means for forming a first capacitance between a first capacitor plate and an object;

means for forming a second capacitance between a second capacitor plate and the object;

means for receiving an input signal;

means for amplifying the input signal;

means for outputting the amplified input signal;

means for forming a negative feedback branch with the means for amplifying an input signal that includes the first and second capacitances;

means for applying an electric charge variation to the means for receiving an input signal; and

means for detecting a voltage at the means for outputting the amplified input signal.

Claim 41 (previously presented): The distance sensor system of claim 40, wherein the means for applying an electric charge variation includes means for applying a first reference voltage to a second capacitive element followed by applying by step variation to the second capacitive element a second reference voltage larger than the first reference voltage.